

CLAIMS

1. Actuator for an electric push-button switch (30), particularly in motor vehicles, with a housing shell (10) with a shell opening (13) for holding the push-button switch (30), with a handle plate (20) aligned with the switch opening (13) for manual actuation (28), with a handle suspension for pushing the handle plate (20) back into an outer, unactuated rest position (20.1), with outer stops (21) on the handle plate (20), on the one hand, and outer opposing stops (11) on the housing shell (10), on the other hand, which determine the outer rest position (20.1) of the suspended handle plate (20),

-- wherein the handle plate (20) can be moved back into an inner operative position (20.2) when actuated (28) against its handle suspension, with a pressure-actuated switching element (31) on the switch housing (32), which can be pushed out by a switch suspension (33) into an extended position (30.1),

-- wherein, in the extended position (30.1), the handle plate (20) is in its rest position (20.1), and the contacts in the push-button switch (30) are in a first switching position, and when the handle plate (20) is actuated (28), the switching element (31) moves against its switch suspension (33) into a

depressed position (30.2), in which its contacts are in a second switching position, characterized by the fact that

-- the switch suspension (33) of the push-button switch (30) is simultaneously the handle suspension for the handle plate (20), which causes the unactuated handle plate (20) to be held by the switch suspension (33) of the push-button switch (30) in its outer rest position (20.1), in which the outer stops (21) of the handle plate rest on the outer opposing stops (11) of the housing shell (10), and that

-- the handle plate (20) has inner stops (22) and the housing shell (10) has inner opposing stops (12), which, when the handle plate (20) is unsymmetrically actuated (29), cause the handle plate (20) to assume an inclined position (20.3) in such a way that the switching element (31) of the push-button switch (30) is nevertheless moved by the handle plate (20) into its depressed effective contact position (30.2)

2. Actuator in accordance with Claim 1, characterized by the fact that, besides the inner stops (22) and the inner opposing stops (12), at least one of the outer stops (21) and outer opposing stops (11) is involved in controlling the effective contact inclined position (20.3) of the handle plate (20).

3. Actuator in accordance with Claim 1 or Claim 2, characterized by the fact that the outer stop (21) and/or the inner stop (22) are arranged in the edge region (27) of the handle plate (20).

4. Actuator in accordance with Claim 3, characterized by the fact that at least three outer stops (21) and/or inner stops (22) are arranged in the edge regions of the handle plate (20).

5. Actuator in accordance with Claim 3, characterized by the fact that the outer stop (21) and/or the inner stop (22) are arranged all around, in all edge regions of the handle plate (20).

6. Actuator in accordance with any of Claims 1 to 5, characterized by the fact that the outer opposing stops (11) are arranged in the edge region (17) of the edge of the opening.

7. Actuator in accordance with any of Claims 1 to 6, characterized by the fact that the inner opposing stops (12) are formed by the shell base (15) of the housing shell (10).

8. Actuator in accordance with any of Claims 1 to 7, characterized by the fact that, in the edge region (27) of the handle plate (20) there is an extension (41, 42), whose shoulder pointing in the direction of the switch suspension forms the outer stop (21), and that a strip (18) that bounds the shell

opening (13) or a section of the strip overlaps the extension (41, 42) of the handle plate (20) and produces the outer opposing stops (11).

9. Actuator in accordance with Claim 8, characterized by the fact that the rear side of the extension (41, 42) facing in the opposite direction from the switch suspension (33) forms the inner stop (22) of the handle plate (20).

10. Actuator in accordance with Claim 8 or Claim 9, characterized by the fact that the extension has an L shape.

11. Actuator in accordance with Claim 8 or Claim 9, characterized by the fact that the extension (41) has a U shape, one of whose U-sidepieces (43) is seated on the rear side (23) of the handle plate (20), while the end of the other U-sidepiece (44) forms the outer stop (21) of the handle plate (20), and that the inner stop (22) is formed by the rear side of a U-crosspiece (45), which joins the two U-sidepieces (43, 44).

12. Actuator in accordance with any of Claims 1 to 11, characterized by the fact that the switch housing (32) of the push-button switch (30) is seated on the shell base (15) of the housing shell (10), and that the switch suspension (33) of the switching element (31) acts on the rear side (23) of the handle plate (20).

13. Actuator in accordance with any of Claims 1 to 11, characterized by the fact that the switch housing (32) of the push-button switch (30) is seated on the rear side (23) of the handle plate (20), and that the switch suspension (33) of the switch element (31) acts on the shell base (15) of the housing shell (10).

14. Actuator in accordance with Claim 12 or 13, characterized by the fact that the push-button switch (13) is arranged in the center (26, 16) of the handle plate (20) or of the shell base (10).

15. Actuator in accordance with any of Claims 1 to 14, characterized by the fact that the handle plate (20) has a square or rectangular shape.

16. Actuator in accordance with Claim 1, characterized by the fact that the inner stop (22), which serves to control the effective contact inclined position (20.3), is arranged on the rear side in the center (26) of the handle plate (20).

17. Actuator in accordance with Claim 16, characterized by the fact that the inner stop (21) is designed as a cam (36), and that the inner opposing stop (12) is formed by the shell base (15) of the housing shell (10).

18. Actuator in accordance with Claim 17, characterized by the fact that the cam (36) is located in the area of the push-button switch (30).

19. Actuator in accordance with any of Claims 1 to 18, characterized by the fact that at least one joint member (51, 52) is arranged between the edge (27) of the handle plate (20) and the edge (17) of the shell opening (13), and that when the handle plate (20) is actuated (28, 29), the joint member (51, 52) allows both symmetrical movement of the handle plate (20) from the rest position (20.1) into the operative position (20.2) and unsymmetrical movement into the inclined position (20.3).

20. Actuator in accordance with Claim 19, characterized by the fact that the joint members (51, 52) act in pairs on opposite sides of the edge (27) of the handle plate and of the edge (17) of the shell opening of the shell housing (10).

21. Actuator in accordance with Claim 19 or Claim 20, characterized by the fact that the joint member (51, 52) consists of an elastomeric material.

22. Actuator in accordance with Claim 21, characterized by the fact that the joint member consists of a web (51) that is attached at one end to the edge (27) of the handle plate (20) and at the other end to the edge (17) of the opening of the

housing shell (10).

23. Actuator in accordance with Claim 22, characterized by the fact that the ends of the web-like joint member (51) are injected on the handle plate (20) and/or on the shell opening (13) of the housing shell (10).

24. Actuator in accordance with Claim 22 or 23, characterized by the fact that the two ends of the elastomeric joint member (51, 52) have recesses (53, 54), which receive edge regions (27) of the handle plate (20) at one end and edge regions (17) of the housing shell (10) in the area of the shell opening (13) at the other end.

25. Actuator in accordance with any of Claims 21 to 24, characterized by the fact that the elastomeric joint member (51) has a double-U shape (53, 54).

26. Actuator in accordance with Claim 25, characterized by the fact that the elastomeric joint member (52) has an S shape (55, 56, 57).

27. Actuator in accordance with Claim 26, characterized by the fact that when the handle plate (20) is actuated (28, 29), the S-crosspiece (57) of the joint member (52) elastically stretches.

28. Actuator in accordance with any of Claims 19 to 27, characterized by the fact that the joint members form a peripheral frame on the handle plate (20).

29. Actuator in accordance with Claims 19 to 28, characterized by the fact that the joint members (51) and the handle plate (20) and/or the housing shell (10) are produced in an injection-molding process by a two-plastic injection technique.